CLAIMS

1   1.   A CD-type disc comprising:

2   a lead-in area;

3   a lead-out area; and

4   a user area, wherein

5   said lead-in area, said lead-out area and said user area all have a compact disc

6   read only memory (CD-ROM) format and are distinguished from each other on a physical

7   layer of the disc, and

8   information having a digital versatile disc (DVD) application format according

9   to a predetermined file system is recorded in said user area.

        2.   The disc of claim 1, wherein the predetermined file system is a universal disc

        format (UDF).

        3.   The disc of claim 1, wherein the predetermined file system is a universal disc

        format (UDF) bridge format.

        4.   An apparatus to record/reproduce data on/from a physical layer of a CD-type

2   disc which is divided into a lead-in area, a lead-out area and a user area, each having a CD-

3   ROM format, comprising:

4   a DVD application audio/video (A/V) encoder to encode a received A/V signal into a

5   DVD format to provide an A/V stream;

6   a first formatter to format the A/V stream according to a predetermined file system for

7   a DVD application; and

8   a second formatter to write data formatted according to the predetermined file system to

9   the user area, to format data for the lead-in area and the lead-out area in the CD-ROM format

10   and to write the CD-ROM formatted data to the lead-in area and the lead-out area.

1   5.   The apparatus of claim 4, wherein the predetermined file system is a universal

2   disc format (UDF).

1   6.   The apparatus of claim 4, wherein the predetermined file system is a universal

2   disc format (UDF) bridge format.

1   7.   The apparatus of claim 4, further comprising:

2   a differentiator to determine whether the disc is a CD and if it is determined that the

3   disc is a CD, to determine whether the CD is a video CD or an audio CD;

4   an analyzer to analyze whether the predetermined file system exists if it is determined

5   by said differentiator that the disc is neither a video CD nor an audio CD;

6   a first deformatter to deformat the DVD application which has been written to the user

7   area when the predetermined file system exists, to provide first deformatted data; and

8   a first decoder to decode the first deformatted data to restore the A/V signal.

1   8.   The apparatus of claim 7, further comprising:

2   a second deformatter to deformat a CD application which has been read from the disc if

3   it is determined by said differentiator that the disc is a video CD or an audio CD, to provide

4   second deformatted data; and

5   a second decoder to decode the second deformatted data to restore the A/V signal.

1   9.   The apparatus of claim 4, further comprising:

2   a first differentiator to determine whether the disc is a DVD or a CD by checking the

3   physical structure of the disc;

4   a second differentiator to determine whether the disc is a video CD or an audio CD if it

5   is determined by said first differentiator that the disc is a CD;

6   an analyzer to analyze whether the predetermined file system exists if it is determined

7   by said second differentiator that the disc is neither a video CD nor an audio CD or if it is

8   determined by said first differentiator that the disc is a DVD;

9   a first deformatter to deformat the DVD application which has been read from the disc

10 if the predetermined file system exists, to provide first deformatted data;

11   a first decoder to decode the first deformatted data to restore the A/V signal;

12   a second deformatter to deformat a CD application which has been read from the disc if

13 it is determined by said second differentiator that the disc is a video CD or an audio CD, to

14 provide second deformatted data; and

15   a second decoder to decode the second deformatted data to restore the A/V signal.

10.   A method of recording/reproducing data on/from a physical layer of a CD-type

disc which is divided into a lead-in area, a lead-out area and a user area, each having a CD-

ROM format, comprising:

        (a) encoding received audio and/or video (A/V) signals into a DVD format to provide

an A/V stream;

        (b) formatting the A/V stream according to a predetermined file system for a DVD

application; and

8   (c) writing the A/V stream formatted according to the predetermined file system to the

9   user area, formatting data for the lead-in area and the lead-out area in the CD-ROM format,

10 and writing the CD-ROM formatted data to the lead-in area and the lead-out area.

1   11.   The method of claim 10, wherein the predetermined file system is a universal

2   disc format (UDF).

1   12.   The method of claim 10, wherein the predetermined file system is a universal

2   disc format (UDF) bridge format.

1   13.   The method of claim 10, further comprising:

2   (d) determining whether the disc is a CD and if it is determined that the disc is a CD,

3   determining whether the CD is a video CD or an audio CD;

4   (e) determining whether the predetermined file system exists if it is determined in said

5   step (d) that the CD is neither a video CD nor an audio CD;

6   (f) deformatting the DVD application written to the user area when the predetermined

7   file system exists, to provide first deformatted data; and

8   (g) decoding the first deformatted data to restore the A/V signals.

1   14.   The method of claim 13, further comprising:

2   (h) deformatting a CD application which has been read from the disc if it is determined

3   in said step (d) that the disc is a video CD or an audio CD, to provide second deformatted

4   data; and

5   (i) decoding the second deformatted data to restore the A/V signals

1   15.   The method of claim 10, further comprising:

2   (d) determining whether the disc is an audio CD by analyzing control information in a

3   sub-Q area of the lead-in area of the disc;

4   (e) playing an audio CD if it is determined in said step (d) that the disc is an audio CD,

5   and, if it is determined in said step (d) that the disc is not an audio CD, determining whether

6   the disc is a video CD by analyzing top of contents (TOC) information;

7   (f) analyzing video CD information on a first track of the disc and playing a video CD

8   according to the analyzed video CD information if it is determined in said step (e) that the disc

9   is a video CD and, if it is determined in step (d) that the disc is not a video CD, analyzing the

10   predetermined file system; and

11   (g) reproducing DVD data if it is determined in said step (f) that the DVD application

12   exists.

1   16.   The method of claim 10, further comprising:

2   (d) discriminating whether the disc is a DVD or a CD by checking the physical

3   structure of the disc;

4   (e) determining the CD type if it is determined in said step (d) that the physical

5   structure of the disc corresponds to that of a CD;

6   (f) determining whether the predetermined file system exists if it is determined in said

7   step (d) that the physical structure of the disc corresponds to that of a DVD or if it is

8   determined in said step (e) that the CD is neither a video CD nor an audio CD;

9   (g) deformatting the DVD application read from the disc when the predetermined file

10   system exists, to provide first deformatted data; and

11   (h) decoding the first deformatted data to restore the A/V signals.

12   17.   The method of claim 16, further comprising:

13   (i) deformatting a CD application which has been read from the disc if it is determined

14   in said step (e) that the CD is a video CD or an audio CD, to provide second deformatted data;

15   and

      (j) decoding the second deformatted data to restore the A/V signals.

1   18.   The method of claim 10, further comprising:

2   (d) determining whether the disc is a DVD or CD by analyzing the physical structure of

3   the disc;

4   (e) determining whether the disc is an audio CD by analyzing control information in a

5   sub-Q area of the lead-in area of the disc if it is determined in said step (d) that the physical

6   structure of the disc corresponds to that of a CD;

7   (f) playing an audio CD if it is determined in said step (e) that the disc is an audio CD,

8   and, if it is determined in said step (e) that the disc is not an audio CD, determining whether

9   the disc is a video CD by analyzing TOC information;

10   (g) analyzing video CD information on a first track of the disc and playing a video CD

11   according to the analyzed video CD information if it is determined in said step (f) that the disc

12   is a video CD and, if it is determined in said step (f) that the disc is not a video CD, analyzing

13   the predetermined file system; and

14   (h) reproducing DVD data if it is determined in said step (g) that the DVD application

15   exists.

1   19.   The method of claim 18, further comprising:

2   (i) analyzing the predetermined file system if it is determined in said step (d) that the

3   physical structure of the disc corresponds to that of a DVD; and

4   (j) reproducing DVD data if it is determined in said step (i) that the DVD application

5   exists.

    20.   A method of recording on a disc physically divided into a lead-in area, a lead-

out area and a user area, comprising:

    formatting the lead-in area, the lead-out area and the user area according to a compact

disc read only memory format; and

    recording information in a digital versatile disc application format in the user area.

1   21.   A CD-type disc recording apparatus, the disc being formatted according to a

2   CD-ROM type format and being divided into a lead-in area, a lead-out area and a user area,

3   comprising:

4   an encoder to encode a signal into a DVD-type format to provide an A/V stream;

5   a formatter to format the A/V stream according to a DVD-type application of the DVD-

6   type format and to write the A/V stream formatted according to the DVD-type application to

7   the user area.

1   22.   An apparatus to reproduce information from a physical layer of a CD-type disc

2   having a lead-in area, a lead-out area and a user area, each having a CD-ROM-type format,

3   comprising:

4   a differentiator to determine whether the disc is a CD and if it is determined that the

5   disc is a CD, to determine whether the CD is a video CD or an audio CD;

6   an analyzer to analyze whether a predetermined file system exists on the disc if it is

7   determined by said differentiator that the disc is neither a video CD nor an audio CD;

8   a first deformatter to deformat a DVD application which has been written to the user

9   area when the predetermined file system exists on the disc, to provide first deformatted data;

10   and

11   a first decoder to decode the first deformatted data to restore an original audio/video

12   signal from the disc.

23.   The apparatus of claim 22, further comprising:

        a second deformatter to deformat a CD application which has been read from the disc if

    it is determined by said differentiator that the disc is a video CD or an audio CD, to provide

    second deformatted data; and

        a second decoder to decode the second deformatted data to restore the original A/V

6   signal.

1   24.   An apparatus to reproduce information from a physical layer of a CD-type disc

2   having a lead-in area, a lead-out area and a user area, each having a CD-ROM-type format,

3   comprising:

4   a first differentiator to determine whether the disc is a DVD or a CD by checking the

5   physical structure of the disc;

6   a second differentiator to determine whether the disc is a video CD or an audio CD if it

7   is determined by said first differentiator that the disc is a CD;

8   an analyzer to analyze whether a predetermined file system exists on the disc if it is

9   determined by said second differentiator that the disc is neither a video CD nor an audio CD or

10   if it is determined by said first differentiator that the disc is a DVD;

11   a first deformatter to deformat a DVD application which has been read from the disc if

12   the predetermined file system exists, to provide first deformatted data;

13   a first decoder to decode the first deformatted data to restore an original A/V signal

14   from the disc;

15   a second deformatter to deformat a CD application which has been read from the disc if

16   it is determined by said second differentiator that the disc is a video CD or an audio CD, to

17   provide second deformatted data; and

18   a second decoder to decode the second deformatted data to restore original A/V signal

19   from the disc.

25.   A method of reproducing data from a physical layer of a CD-type disc which is

divided into a lead-in area, a lead-out area and a user area, each having a CD-ROM format,

comprising:

(a) determining whether the disc is a CD and if it is determined that the disc is a CD,

determining whether the CD is a video CD or an audio CD;

6   (b) determining whether a predetermined file system exists on the disc if it is

7   determined in said step (a) that the CD is neither a video CD nor an audio CD;

8   (c) deformatting a DVD application written to the user area when the predetermined file

9   system exists, to provide first deformatted data; and

10   (d) decoding the first deformatted data to restore original A/V signals from the disc.

1   26.   The method according to claim 25, further comprising:

2   (e) deformatting a CD application which has been read from the disc if it is determined

3   in said step (a) that the disc is a video CD or an audio CD, to provide second deformatted data;

4   and

5   (f) decoding the second deformatted data to restore the original A/V signals.

1   27. A method of reproducing data from a physical layer of a CD-type disc which is

2 divided into a lead-in area, a lead-out area and a user area, each having a CD-ROM format,

3 comprising:

4   (a) determining whether the disc is an audio CD by analyzing control information in a

5 sub-Q area of the lead-in area of the disc;

6   (b) playing an audio CD if it is determined in said step (a) that the disc is an audio CD,

7 and, if it is determined in said step (a) that the disc is not an audio CD, determining whether

8 the disc is a video CD by analyzing top of contents (TOC) information;

9   (c) analyzing video CD information on a first track of the disc and playing a video CD

10 according to the analyzed video CD information if it is determined in said step (b) that the disc

11 is a video CD and, if it is determined in step (a) that the disc is not a video CD, analyzing a

12 predetermined file system on the disc; and

13   (d) reproducing DVD data if it is determined in said step (c) that the predetermined file

14 system exists.

1   28. A CD-type disc recording apparatus, the disc being formatted according to a

2 CD-ROM type format and being divided into a lead-in and/or a lead-out area and a user area,

3 comprising:

4   an encoder to encode a signal into a DVD-type format to provide an A/V stream; and

5   a formatter to format the A/V stream according to a DVD-type application of the DVD-

6 type format and to write the A/V stream formatted according to the DVD-type application to

7 the user area.

1   29. A method of reproducing data from a physical layer of a disc which is divided

2 into a lead-in area, a lead-out area and a user area, each having a CD-ROM format,

3 comprising:

4   (a) determining whether the disc has a first format and if it is determined that the disc

5   has the first format, determining whether the disc is a type A disc or a type B disc;

6   (b) determining whether a predetermined file system exists on the disc if it is

7   determined in said step (a) that the disc is neither a type A disc nor a type B disc;

8   (c) deformatting an application of a second format written to the user area when the

9   predetermined file system exists, to provide first deformatted data; and

10   (d) decoding the first deformatted data to restore original A/V signals from the disc.

1   30.   An optical disc comprising:

2   a lead-in and/or lead-out area; and

3   a user area, wherein

4   said lead-in and/or lead-out area and said user area all have a first format type

and are distinguished from each other on a physical layer of the optical disc, and

6   information having a second format type according to a predetermined file

7   system is recorded in said user area.

31.   A CD-type disc comprising:

a lead-in and/or lead-out area; and

3   a user area, wherein

4   said lead-in and/or lead-out area and said user area all have a compact disc read

5   only memory (CD-ROM) format and are distinguished from each other on a physical layer of

6   the disc, and

7   information having a digital versatile disc (DVD) application format according

8   to a predetermined file system is recorded in said user area.

1   32.   An apparatus to record data on a physical layer of an optical disc which is

2   divided into a lead-in area, a lead-out area and a user area, each having a first format type,

3   comprising:

4   an application audio/video (A/V) encoder to encode a received A/V signal into a second

5   format type to provide an A/V stream;

6   a first formatter to format the A/V stream according to a predetermined file system for

7   an application of the second format type; and

8   a second formatter to write data formatted according to the predetermined file system to

9   the user area, to format data for the lead-in area and the lead-out area in the first format type

10   and to write the first format type formatted data to the lead-in area and the lead-out area.